

Attorney's Docket No. K&A 23-0174
Client's Docket No. 14500

APPLICATION

FOR UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, **BRETT VECSEY**, a citizen of
UNITED STATES OF AMERICA, have invented a new and useful
LEG SUPPORT SYSTEM of which the following is a specification:

LEG SUPPORT SYSTEM

5

BACKGROUND OF THE INVENTION

Field of the Invention

10

The present invention relates to leg support devices and more particularly pertains to a new leg support system for transferring weight support from the ankle region of a leg to the upper portion of the calf just below the knee.

15

Description of the Prior Art

The use of leg support devices is known in the prior art. U.S. Patent No. 5,300,016 to Marlatt describes prosthetic device having a shelf on which the lower leg rests in a bent position. Another type of leg support device is U.S. Patent No. 5,575,299 to Bieri including a body member for attachment to the shin portion of the lower leg for supporting the bent lower leg on attached support and foot members. U.S. Patent No. 5,941,263 to Bierman discloses a device similar to Marlatt and Bieri in that the lower leg is again supported in the bent position. U.S. Patent No. 6,206,018 to Daniels, Jr. discloses a crutchless leg support system that has a support plate to be positioned under the lowermost portion of the leg and a cushioned arcuate member to be positioned between the user's legs in the crotch area.

20

25

30

While these devices fulfill their respective, particular objectives and requirements, the need remains for a device that is usable by temporarily injured persons to comfortably transfer weight bearing away from the ankle region while the leg is left in a substantially normal position.

SUMMARY OF THE INVENTION

The present invention meets the needs presented above by providing a weight-bearing support cuff that fits around the lower leg below the knee in combination with support members extending down even with or just below the user's natural foot position.

An object of the present invention is to provide a new leg support system that supports the knee using a cuff supported on opposing sides to obviate support directly beneath the knee joint such that the inventive device is useful for persons having two legs of equal length.

Another object of the present invention is to provide a new leg support system that provides partial or total weight-bearing while the user's leg is in a substantially unbent position.

To this end, the present invention generally comprises a weight-bearing support cuff and a pair of support members each having a foot portion positioned even with or slightly lower than the natural position of the bottom of the foot of the user.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better

appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

5 The objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

 The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such
15 description makes reference to the annexed drawings wherein:

 Figure 1 is a side in use view of a new leg support system according to the present invention.

20 Figure 2 is a side view of the present invention.

 Figure 3 is a front view of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

25 With reference now to the drawings, and in particular to Figures 1 through 3 thereof, a new leg support system embodying the principles and concepts of the present invention and generally designated by the reference numeral 10 will be described.

30 As best illustrated in Figures 1 through 3, the leg support system 10 generally comprises a weight-bearing support cuff 20 designed to fit around a user's lower leg 2 below a knee 4. Support

members 22 extend down from the support cuff 20. The support members 22 each have a length designed for engaging a supporting surface 3 when the user transfers weight onto the user's leg. Thus, the support members 22 transfer the weight of the user to the support cuff 20.

Each support member 22 has an arcuate lower surface 24 for facilitating pivoting of the support members 22 on the supporting surface to approximate a natural walking motion.

10

A plurality of straps 26 are provided for securing the support cuff 20 and the support members 22 to the user's leg 2.

The support cuff 20 includes a pair of raised upper side portions 28 such that a front edge 30 of the support cuff 20 extends up and around a patellar region 6 of the user from beneath the patellar region for preventing displacement of a patella 8 of the user during use.

Each support member 22 includes a screw slot 32 for coupling the support member 22 to the support cuff 20. A plurality of screws 34 are provided. Each screw 34 is adjustably engageable to a respective one of the support members 22 by tightening the screw 34 at a selectable position within a respective one of the screw slots 32. Thus, the length each support member 22 extends below the support cuff 20 is adjustable. The length may be adjusted to have the bottom of the support member extend even with or below the bottom of the foot of the user depending on how much weight is to be borne by the invention.

30

Each support member 22 has an extension portion 36 and a foot portion 38. The extension portions 36 are positioned in substantial alignment with each other and extend from the respective foot portion 38 at an angle such that each extension portion 36 is designed for passing in front of a respective one of the lateral malleolus 5 and the medial malleolus (not shown), commonly known as the ankle bones, of the user.

A respective rubber footing 40 covers the lower surface of each support member 22 to enhance friction and prevent slippage of the support member 22 while it is supporting weight of the user.

A lower portion 42 of the support cuff 20 tapers to conform to a shape of the user's leg 2 tapering from a lower calf region 7 towards an ankle region 9 of the user. Thus, the lower portion 42 of the support cuff 20 is designed for supporting weight of the user by positioning the lower portion 42 of the cuff 20 vertically below the tapered calf region of the user's leg. By the cuff encircling the lower leg and positioning the support members on opposite sides of the cuff, the line of support extends through the joint. Thus, the invention maintains weight support through the knee joint in the natural extended position.

The plurality of support straps 26 include a pair of cuff straps 44 extending around the support cuff 20 for facilitating securing of the support cuff 20 to the user to prevent slippage of the support cuff 20 during use. As shown in Figure 1, the plurality of support straps 26 may include a pair of loose bands 46 securable around the support members 22 and the leg 2 of the user at a selectable position to facilitate comfortable securing of the support members

22 to the leg 2. Although the bands 46 may be loose to facilitate
free positioning of the bands 46 along the length of the support
members 22, as shown in Figures 2 and 3, they may also be attached
to the support members 22 directly through slots or other
5 conventional means.

Lower portions of the support members are bowed outwardly
to widen the base support of the device and to offset the bottom of
the support member from a center of gravity of each support
10 member. Thus, the top portion of each support member is urged
inwardly towards the cuff to inhibit disengagement of the support
members from the cuff during use.

In use, the user either inserts their leg through the cuff, or the
15 cuff is wrapped and secured around the user's leg as shown in
Figure 1. The straps are secured to hold the cuff snugly on the area
of the user's leg just below the knee. If not already adjusted, the
support members are adjusted to the desired height depending on
whether full support or partial support is desired. As shown in
20 Figure 1, the support members are angled to avoid passing directly
over the medial and lateral malleolus for comfort. The straps are
secured to hold the support members in place against the leg. The
user then walks with a generally normal motion permitted by the
combination of arcuate bottom surfaces of the support members and
25 transfer of weight by the support cuff through the knee joint in a
natural fashion equivalent to a normal walking motion.

With respect to the above description then, it is to be realized
that the optimum dimensional relationships for the parts of the
30 invention, to include variations in size, materials, shape, form,
function and manner of operation, assembly and use, are deemed

readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

5

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable
10 modifications and equivalents may be resorted to, falling within the scope of the invention.